

Please add new claims 41-78 as set forth below:

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41 (new). A method for forming a gas-enriched fluid comprising the acts of:

providing a mixer having an internal mixing chamber having a first inlet, a second inlet, and an outlet;

delivering a first fluid to the mixing chamber of the mixer via the first inlet; and

delivering a second fluid having a liquid phase supersaturated with a gas to the mixing chamber of the mixer via the second inlet to mix with the first fluid and form the gas-enriched fluid.

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42 (new). The method, as set forth in claim 41, wherein the second fluid also has a gas phase.

43 (new). The method, as set forth in claim 42, wherein the gas phase of the second fluid comprises oxygen.

44 (new). The method, as set forth in claim 41, wherein the gas comprises oxygen.

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45 (new). The method, as set forth in claim 41, wherein the liquid phase of the second fluid comprises a physiologic solution isotonic to blood.

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46 (new). The method, as set forth in claim 41, wherein the liquid phase of the second fluid comprises physiologic saline.

47 (new). The method, as set forth in claim 41, wherein the first fluid comprises blood.

48 (new). The method, as set forth in claim 41, wherein the gas dissolves in the gas-enriched fluid in greater concentration than in the first fluid.

49 (new). The method, as set forth in claim 41, wherein gas-enriched fluid comprises hyperoxic blood.

50 (new). The method, as set forth in claim 41, wherein the gas-enriched fluid comprises hyperbaric blood.

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51 (new). The method, as set forth in claim 41, wherein the first inlet is arranged to create a vortical flow in the mixing chamber.

52 (new). The method, as set forth in claim 41, wherein the second fluid enters the chamber in a generally upward direction.

53 (new). The method, as set forth in claim 41, wherein the first fluid enters the chamber in a first direction and the second fluid enters the chamber in a second direction, the first direction being substantially perpendicular to the second direction.

54 (new). The method, as set forth in claim 41, wherein the first fluid enters the chamber in a first direction and the second fluid enters the chamber in a second direction, the first direction being substantially opposite the second direction.

55 (new). The method, as set forth in claim 41, wherein the mixing chamber is pressurizable.

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56 (new). A method for mixing blood and a fluid including a dissolved gas

comprising the acts of:

providing a mixer having a pressurizable internal mixing chamber having a first inlet, a second inlet, and an outlet, the first inlet being arranged to create a vortical flow within the mixing chamber;

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providing a pump adapted to deliver blood to the mixing chamber of the mixer via the first inlet; and

providing a gas-supersaturated fluid supply assembly adapted to deliver a gas-supersaturated fluid to the mixing chamber of the mixer via the second inlet, the blood and gas-supersaturated fluid mixing with one another to form a mixed fluid.

57 (new). The method, as set forth in claim 56, wherein the gas-supersaturated fluid comprises a physiologic solution isotonic to blood.

58 (new). The method, as set forth in claim 56, wherein the gas-supersaturated fluid comprises physiologic saline.

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59 (new). The method, as set forth in claim 56, wherein the gas comprises oxygen.

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60 (new). The method, as set forth in claim 56, wherein the mixing chamber comprises a substantially cylindrical wall and wherein the first inlet is arranged to direct fluid along a path substantially tangential to the cylindrical wall.

61 (new). The method, as set forth in claim 56, wherein the second inlet is arranged to direct the second fluid in a generally upward direction.

62 (new). The method, as set forth in claim 56, wherein the second inlet is arranged to direct the second fluid in a direction normal to the initial direction of travel of the first fluid entering the chamber.

63 (new). The method, as set forth in claim 56, wherein the second inlet is arranged to direct the second fluid in a direction opposite to the initial direction of travel of the first fluid entering the chamber.

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64 (new). The method, as set forth in claim 56, wherein the gas-supersaturated fluid supply assembly comprises a capillary assembly.

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65 (new). The method, as set forth in claim 64, wherein the capillary assembly comprises a single capillary.

66 (new). The method, as set forth in claim 64, wherein the capillary assembly comprises a plurality of capillaries.

67 (new). The method, as set forth in claim 56, comprising the acts of:

using the pump to provide blood flow to the mixing chamber;

accumulating a supply of blood in the mixing chamber concomitantly with the blood flow; and

forming in the mixing chamber a gas head promoting dampening of pulsatility of the blood flow.

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68 (new). A blood oxygenation method comprising the act of:
extracorporeally mixing blood and an oxygen-supersaturated fluid to effect direct liquid-to-liquid oxygenation forming oxygen-enriched blood.

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69 (new). The method, as set forth in claim 68, wherein the mixing occurs within a pressurizable chamber.

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70 (new). The method, as set forth in claim 68, wherein the oxygen-enriched blood has a pO_2 greater than about 500 mm Hg.

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71 (new). The method, as set forth in claim 68, wherein the oxygen-enriched blood has a pO_2 greater than about 760 mm Hg.

72 (new). The method, as set forth in claim 68, wherein the oxygen-enriched blood has a pO_2 greater than about 1000 mm Hg.

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73 (new). The method, as set forth in claim 68, wherein the mixing occurs within a chamber at a pressure greater than about 760 mm Hg.

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74 (new). The method, as set forth in claim 68, wherein the mixing occurs within a chamber at a pressure greater than about 1000 mm Hg.

75 (new). The method, as set forth in claim 68, wherein the mixing comprises convective mixing.

76 (new). The method, as set forth in claim 69, wherein the blood is provided continuously to the chamber.

77 (new). The method, as set forth in claim 69, wherein the oxygen-supersaturated fluid is provided continuously to the chamber.

78 (new). The method, as set forth in claim 69, wherein the oxygen-supersaturated fluid is provided intermittently to the chamber.